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The Newfoundland sawmill and planing mill industry, 1981/82

G.R. Milne

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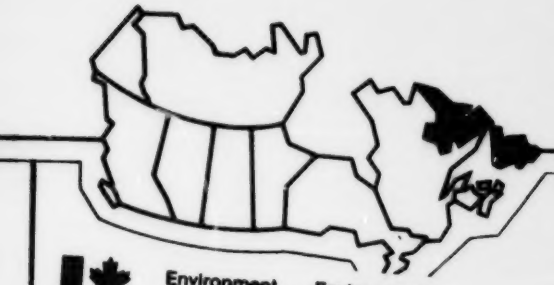

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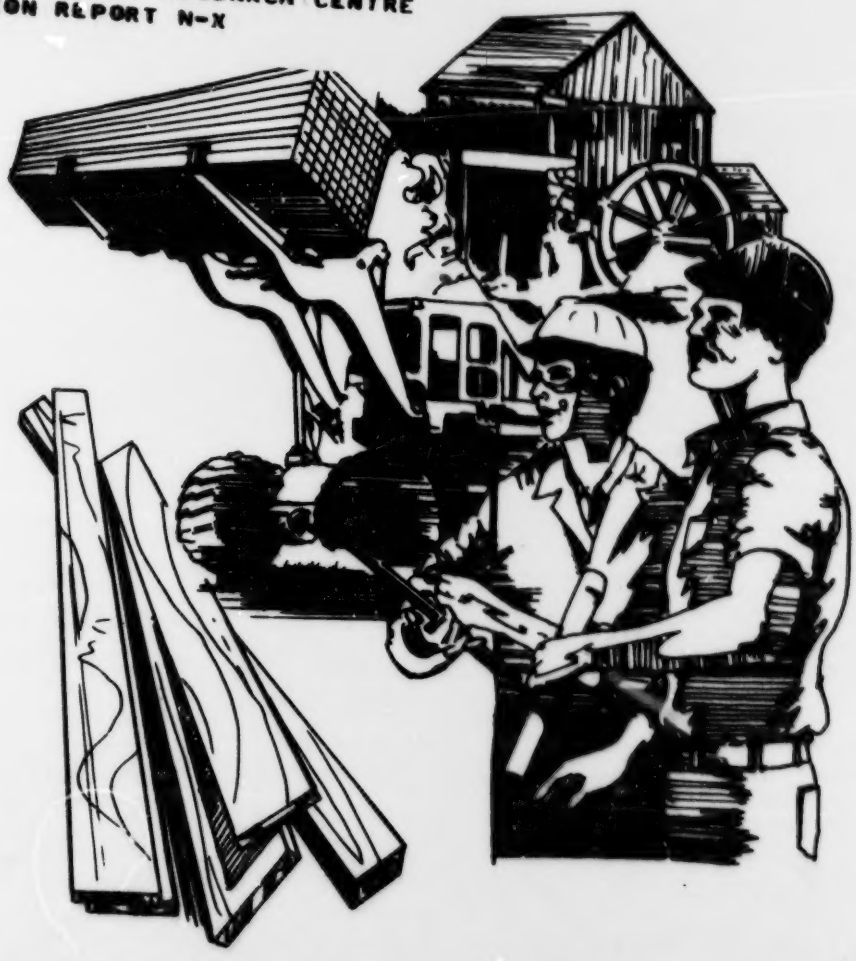

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THE NEWFOUNDLAND SAWMILL AND PLANING MILL INDUSTRY: STRUCTURE, PRODUCTION, AND IMPACT ON THE PROVINCIAL ECONOMY, 1981/82

by G.R. Milne

INFORMATION REPORT N-X-221
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ABSTRACT

This report presents a detailed analysis of the Newfoundland sawmill and planing mill industry for 1981/82 based on a 1981 questionnaire survey as well as several published and non-published sources. Data are provided on industry structure, production, lumber prices, markets, and major contributions to the provincial economy. The industry is also compared to other forestry and non-forestry sectors of the economy. Problems and opportunities are discussed in view of future development potential.

RÉSUMÉ

Ce rapport présente une analyse détaillée de l'industrie du sciage et du rabotage à Terre-Neuve en 1981-1982 qui a été réalisée à partir des réponses obtenues à un questionnaire en 1981, ainsi que d'informations publiées et non publiées de diverses provenances. Des données sont fournies sur la structure de l'industrie, la production, les prix du bois, les marchés et les apports importants à l'économie de la province. Une comparaison de l'industrie avec d'autres secteurs de l'économie reliés ou non aux forêts est également effectuée. Des problèmes et possibilités sont examinés dans une perspective de développement.

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1.0 INTRODUCTION

We often hear that the forest industry plays an important social and economic role in Canada. At the national level, these contributions, or impacts, have been well identified and quantified in several studies; e.g., Nadeau, 1981; Ondro and Williamson, 1982; Reed, 1973. At the regional level however, data on the forest industry or certain sectors of the industry, are lacking in some provinces. For Newfoundland, the impact of the forest industry on the provincial economy has never been clearly identified and quantified. In particular, the impacts of the sawmill and planing mill sector[1] have largely been ignored. Published data sources such as Statistics Canada, do not include the majority of Newfoundland's sawmills which are small, portable operations, therefore, the true scope of this sector is not fully illustrated in studies examining economic impacts generated in the province. There are three main reasons why these impacts should be fully identified and quantified (Nadeau, 1981):

a) To help justify Government forestry investments in forestry, in this case the sawmill and planning mill industry;

b) To determine if this sector can contribute to increased economic development in rural areas; and,

c) To assist in evaluating the effects of changes in forest policy related to the sawmill and planing mill industry.

---

[1]Definition of sawmill and planing mill industry is presented in Appendix A.

This study has two major objectives. First, statistics on all mill classes in the Newfoundland sawmill and planing mill industry will be presented and analyzed. Second, these data will be used to estimate the major economic impacts generated by the industry within the province.

This study is divided into the following sections: chapter two discusses study methods and data sources; chapter three presents a profile of the industry, historically and currently; chapter four provides a detailed analysis of lumber production; chapter five evaluates lumber prices and import competition; chapter six presents the major economic impacts derived from the industry; chapter seven analyzes the industry's performance over a ten-year period and compares economic indicators with other forestry and non-forestry sectors in Newfoundland; chapter eight presents additional statistics on the industry; chapter nine discusses industry problems and opportunities; and chapter ten provides a summary of the report.

2.0 METHODOLOGY AND DATA SOURCES

Data on the industry were collected from several published and non-published sources, including the results of two questionnaire surveys of the sawmill industry. The questionnaire surveys, which addressed mainly economic data, were conducted in 1981. The first survey was a pre-test in the Bonavista peninsula region. Results have been published as an information report (Milne, 1982). The second

survey collected data from the remainder of the province, using a mail out - mail back questionnaire[1]. Mills producing less than 60 m^3 of lumber per year were subject to a random survey, while all mills in larger production classed received a questionnaire. The survey response rate is shown in Table 1.

Table 1. Sample population and response rate.

	Mill Production Class[2] (m^3)	Number of Mills[1]	Questionnaires Mailed	Questionnaires Returned	Response Rate (%)
1	< 24	734	175	62	35
2	25- 59	143	25	6	24
3	60- 118	85	85	39	46
4	119- 177	33	33	15	45
5	178- 236	23	23	10	43
6	237-1180	68	68	28	41
7	> 1180	12	12	10	83
	TOTAL	1098	421	170	40

[1]These numbers exclude mills sampled in the earlier trial survey of the Bonavista Peninsula.

An analysis of data was carried out by the Data Analysis and Systems Branch, Computing and Applied Statistics Directorate of Environment Canada in Ottawa. The main thrust of the analysis was to calculate a wide range of output in two forms:

1) ratios based on lumber production such as employees per m^3, income per m^3, etc.; and,

---

[1]Sample questionnaire presented in Appendix B.

[2]Conversion factors are listed in Appendix F.

2) percentage values such as % of dressed lumber out of total production.

Using this analytical approach, the information collected during the 1981 survey was applied in this study. Using data from the Provincial Department of Forest Resources and Lands on the number of mills and production in any given year, estimates of economic impacts and production details are possible. A summary of the major survey ratios is presented in Appendix E.

3.0 INDUSTRY PROFILE

3.1 Historical Background

Sawmills have long been a part of Newfoundland's rich historical background. The first sawmill recorded in the province was built in the early 1600's on the eastern coast, to supply Sir John Guy's colony at Cupids, the first English colony in the New World (Gray, 1981). Over the next 200 years, many sawmills were constructed in coastal areas to supply lumber to fishing communities. By 1884, there were 55 sawmills in the province producing approximately 27 000 m^3 of lumber annually. The industry gradually expanded over the next twenty years; by 1904, there were over 190 sawmills with annual lumber production of nearly 103 000 m^3. This expansion was based upon a large export market for white pine lumber, however by 1912, the industry began to decline for several reasons. First, the large stands of white pine were becoming more scarce and inaccessible. Second, log quality was poor with a high cull factor of 35 to 40 percent (Poole et al., 1981). Third, recently established pulp and paper interests were acquiring large areas of timber limits in the interior of the Island.

The decline in production continued until the second world war, however, the number of sawmills increased to nearly 1000, indicating reductions in sawmill size and capacity. Thus, the industry was changing from an export oriented sector with a limited number of large mills, to a sector composed of mainly small, portable "push-bench" mills serving domestic markets.

During the second world war and throughout the 1950's, production levels increased, mainly in response to construction associated with military activity on the Island. In the mid 1950's, annual lumber production reached a record level of 141 000 m^3. Also, throughout this period the number of sawmills increased to over 1600, again mainly in the small push-bench category.

A second period of decline took place during the 1960's with production falling to 60 000 m^3 of lumber and the number of mills dropping to approximately 1000 by 1968. Up to the present, production has increased to an average of approximately 88 000 m^3 with fluctuations in either direction depending upon market conditions. The number of mills, however, has increased to approximately 1700 by 1981, with the major expansion in the smaller mill classes.

3.2 Industry Structure

The Newfoundland sawmill industry has evolved into a manufacturing sector serving domestic markets, aside from a brief period in the late 1800's when white pine lumber was sawn for export. The structure of the industry has adapted to meet local conditions such as small timber size, limited areas of unalienated Crown land, and a

preference in many rural areas to include sawmilling as only one form of seasonal employment. As a result of these factors, a unique sawmill industry structure has developed in Newfoundland. Of the approximately 1700 sawmills licenced in 1981/82, 1229 mills each produced less than 24 m^3 of lumber. For the same period, there were only eight sawmills producing more than 1180 m^3 of lumber annually. The largest mill in Newfoundland produced just over 5100 m^3 of lumber in 1981-82. The following table illustrates this situation (Table 2).

Table 2. Newfoundland sawmill industry structure, 1981/82.

Year - 1981/82	Annual Mill Production Class (m^3)					
	< 24	25 to 118	119 to 236	237 to 1180	+1180	Total
Number of mills	1229	302	85	55	8	1679[1]
% of total	73.2	18.0	5.1	3.3	0.5	100.0[2]
Class production (m^3)	8167	17118	14891	25751	12852	78778
% of total	10.4	21.7	18.9	32.7	16.3	100.0[2]

[1]Totals exclude sawmills not returning an annual production report to the provincial Government, 91 in 1980 and 62 in 1981.

[2]Totals may not add due to rounding.

Source: Department of Forest Resources and Lands.

The sawmill industry in Newfoundland is composed of more than 1600 very small, portable push bench mills (less than 237 m^3 annually) which produce approximately 50 percent of total lumber output. Less than 70 larger class sawmills (greater than 237 m^3 annually) produce the

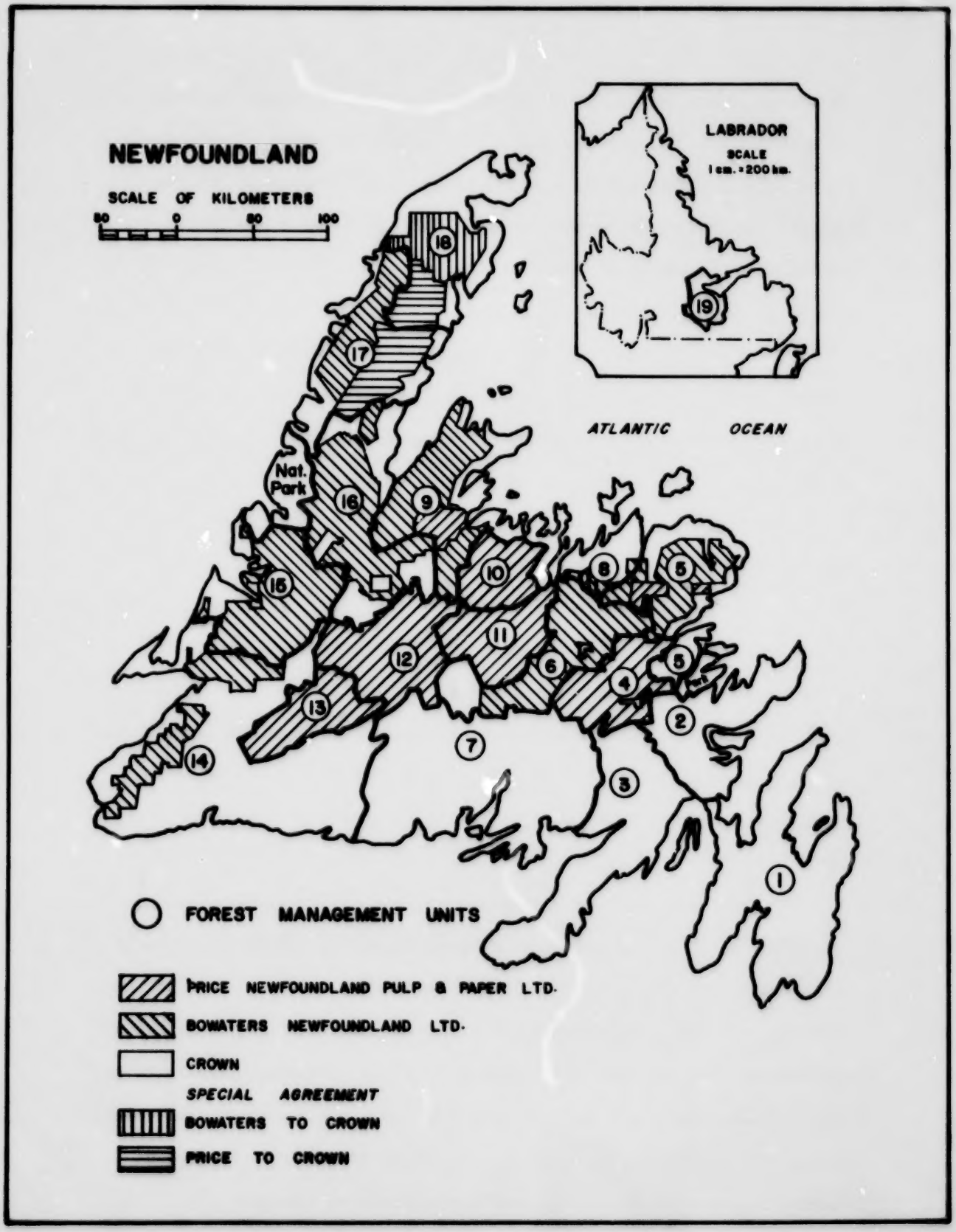
remaining 50 percent of lumber output. To put the industry structure in perspective one should note that a single large dimension lumber mill in western Canada can produce over 236 000 m^3 of lumber annually. In 1981/82, according to provincial statistics, over 1700 sawmills in Newfoundland produced 78 778 m^3 of lumber.

3.3 Regional Distribution

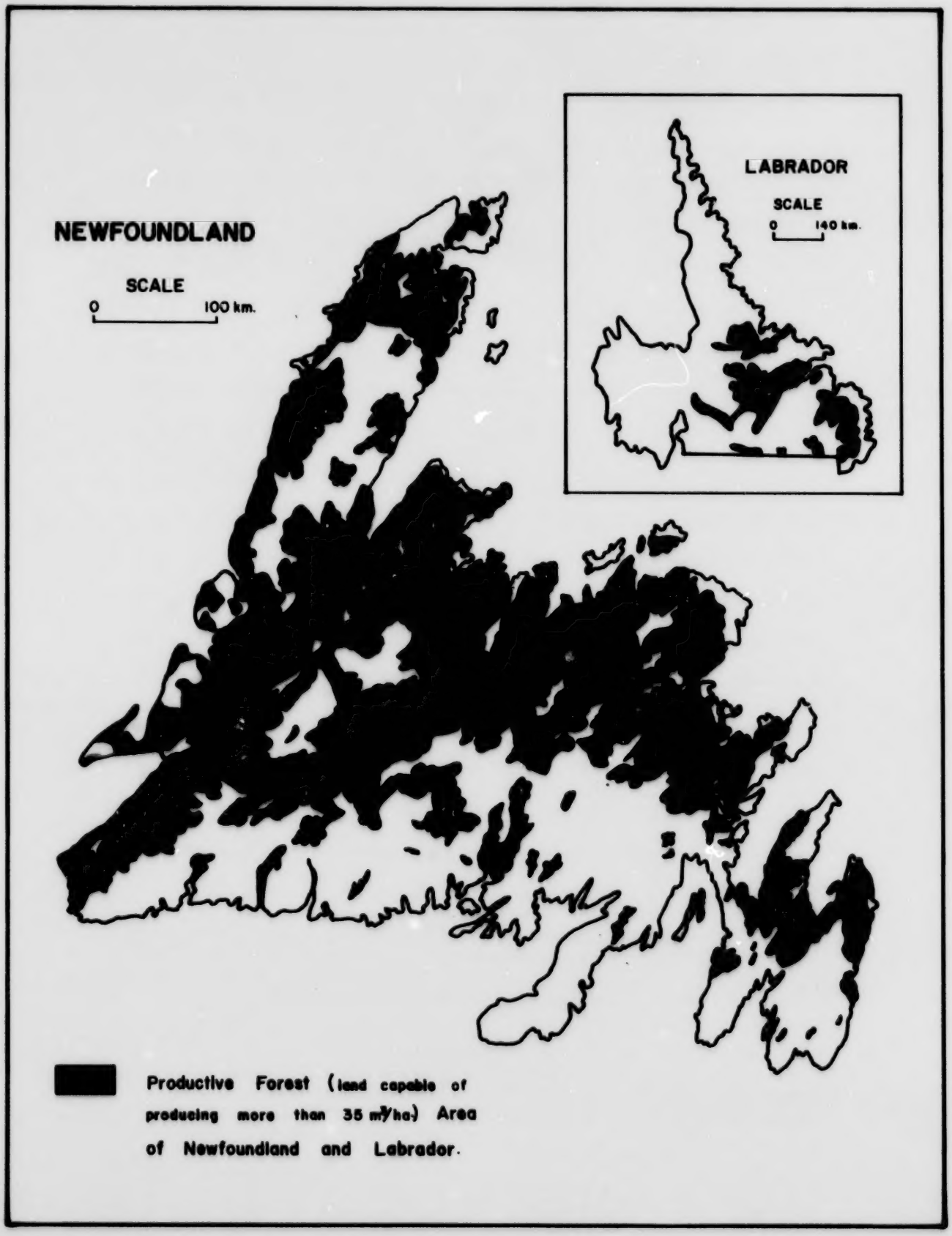
The 1700 sawmills in Newfoundland are widely distributed throughout the Island and Labrador. A total of 19 forest management units were established in the province in 1974 following a recommendation of the 1973 Federal-Provincial Task Force on forestry (Figure 1). Also shown in Figure 1 is the land base under tenure to the major pulp and paper companies. Combining productive forest area (Figure 2) with Figure 1 indicates the area of productive forests on unalienated crown land where most sawmills are located. The bulk of available Crown forest is located around coastal areas, and in eastern Newfoundland.

The provincial Department of Forest Resources and Lands compiles sawmill statistics for each management unit in terms of production and numbers of mills. The latest available data are for 1981/82 (Table 3).

The eastern region contains the largest conglomeration of sawmills (43.5%). The majority of these mills are in the smaller classes and are concentrated within Management Unit 2. Of interest is that most of the larger sawmills in Newfoundland are located in the central region. In 1981 there were 74 mills in Labrador, mainly in the smaller size classes. Overall, the industry can be described as a large number of, mainly small, seasonal operations distributed throughout coastal regions of the Island and the interior of Labrador.



Forest management units and area of pulp and paper company tenure, Newfoundland.



Productive forest area, Newfoundland.

Table 3. Regional distribution of sawmills in Newfoundland, 1981/82.

Management Units	Number of Mills by Class (m^3)						
	< 24	25 to 118	119 to 236	237 to 1180	+1180	Total[1]	%
Eastern							
1	152	40	8	7	0	207	12.3
2	380	70	30	8	0	488	29.1
3	27	9	0	0	0	36	2.1
Sub-total	559	119	38	15	0	731	43.5
Central							
4	0	0	0	0	0	0	0.0
5	71	20	4	2	4	101	6.0
6	0	0	0	0	0	0	0.0
7	12	7	1	4	0	24	1.4
8	83	23	11	12	1	130	7.7
9	78	23	9	3	0	113	6.7
10	6	1	1	1	1	10	0.6
11	1	1	0	0	0	2	0.1
12	2	2	1	1	1	7	0.4
13	0	0	0	0	0	0	0.0
Sub-total	253	77	27	23	7	387	23.0
Western							
14	106	34	0	3	0	143	8.5
15	79	23	7	5	0	114	6.8
16	20	14	6	5	0	45	2.7
17	67	10	1	1	0	79	4.7
18	87	13	3	2	1	106	6.3
Sub-total	359	94	17	16	1	487	29.0
Labrador							
19	58	12	3	1	0	74	4.4
TOTAL	1229	302	85	55	8	1679	100.0[2]

[1]Excludes 62 mills not submitting a sawmill return form.

[2]Total may not add to 100.0 due to rounding.

Source: Appendix C.

4.0 INDUSTRY PRODUCTION

4.1 Introduction

Lumber production was evaluated using survey results and provincial records. Both data sources contain a margin of error. The survey results are estimates based on samples. The provincial records, while covering a wider mill population, may also not be totally accurate. A lack of official scaling in many mills, and inadequate knowledge of scaling by many small operators contribute to incorrect returns being sent in by many mills.

4.2 Estimation of Lumber Production[1]

The survey results were tested for overall accuracy as follows. First, the results of the Bonavista peninsula survey were summed with those from the larger survey of the remaining regions in the province. A total production estimate was 107 254 m^3 for 1980/81. The second approach applied average production values per mill class, calculated from the larger survey, to the entire province including the Bonavista region. A total production estimate of 107 131 m^3 was calculated. Therefore, a difference of less than one percent suggests the survey results were quite accurate. Compared to provincial estimates, the survey results are approximately 16 percent higher. In looking at different mill classes, the variation in production between the two sources is as follows (Table 4).

---

[1] The reader should not assume production estimates have a precision of ± 1 m^3. Production estimates in m^3 were not rounded off because converting to FBM; i.e. (x 423.4) using rounded off values would give a wider margin of error.

Table 4. Provincial versus survey production, by class.

Mill Production Classes	Percentage Difference In Production
1, 2, 3	31.7
4, 5	0.4
6. 7	10.2
Overall	15.7

If the assumption is made that Provincial sawmill returns consistently underestimate true lumber production, there are two methods for revising the Provincial summaries. The first approach applies the average production per mill, from the 1981 survey, to the Provincial summary data. The fundamental weakness in this technique is the assumption that mill owners will produce the same amount of lumber each year, irregardless of markets. Clearly, this is not a valid assumption. The second approach simply increases the lumber production from the Provincial summary by applying the percentages in Table 4. This approach assumes the percentage factors are constant each year. While this assumption may have weaknesses, the second approach is felt to yield more accurate results.

The second approach was used to estimate rough lumber production for 1981/82 by class (Table 5).

The 63 mills in classes 6 and 7 manufactured 48 percent of total lumber production. These mills are the larger, more mechanized operations. The intermediate mills, classes 4 and 5, produced 16 percent of total output, while the small mills, classes 1, 2 and 3, produced 37 percent.

Table 5. Rough lumber production in Newfoundland, 1981/82.

	Mill Production Class	Total Production (m^3)	% of Production	No. of Mills in Class	$\bar{x}$ Production per mill (m^3)
1	< 24 m^3	10765	12	1229	8.8
2	25 to 59 m^3	9779	11	192	50.9
3	60 to 118 m^3	12784	14	110	116.2
4	119 to 177 m^3	5818	6	40	145.5
5	178 to 236 m^3	9167	10	45	203.7
6	237 to 1180 m^3	28401	32	55	516.4
7	+ 1180 m^3	14174	16	8	1771.8
	TOTAL	90088	100	1679[1]	53.7

[1]Does not include 62 mills which did not submit a sawmill licence return.

4.3 Dressed Production

According to the survey, 42 percent of rough lumber was "dressed" (planed) prior to sale. Therefore, an estimated 37,873 m^3 of total rough lumber production was marketed as dressed lumber in 1981/82. This percentage may slightly underestimate dressed production. The Department of Forest Resources and Lands does not include planing mills in its list of operators. Large planer mill operations were identified for the survey by industry and Provincial forestry officials since these plants are well known. While the survey itself revealed many smaller planer mills, some of these operations might have been missed.

4.4 Custom Work

Many of the smaller sized mills undertake custom sawing and/or planing for individuals supplying either logs or rough lumber. Payment can be in the form of cash, or a portion of the finished lumber. Custom work accounted for 18 percent of rough lumber production and 14 percent of dressed production. In terms of volume, custom work was 16,216 m^3 rough lumber, and 5302 m^3 of dressed lumber in 1981/82 (Table 6).

4.5 Personal Consumption

Approximately 4 percent, or 3604 m^3 of rough lumber production was used by mill owners for personal consumption in 1981/82 (Table 6). Uses include houses, fences, outbuildings, wharves and boats. Where a large quantity of lumber is required, for example in a house, an individual may purchase a push-bench mill, cut his own logs and manufacture the required lumber.

Table 6. Lumber production, by type in Newfoundland, 1981/82.

Total Rough Production (m^3)	Volume Dressed	Custom Work		Personal Consumption (Rough)
		Rough	Dressed	
90,088	37,873	16,216	5,302	3,604

From the previous table, approximately 19 820 m^3 of rough lumber, or 22 percent of total rough production, was accounted for through personal consumption and custom sawing. This lumber was not sold commercially. Therefore, 70 268 m^3 or 78 percent of total rough lumber production was available for commercial sale. From this volume, 32 571 m^3 (37,873-5,302) was dressed and also sold commercially.

4.6 Value of Production

Based on the volume of production in 1981/82, the percentage rough and dressed, and lumber prices, the value of production is estimated at $8,808,723. A more detailed discussion of lumber prices is presented in the next chapter of this report.

4.7 Roundwood Consumption

A total of 90 088 m^3 of lumber was produced in 1981/82 (Table 6). Using a conversion factor of 0.32599 lumber per 1.0 m^3 sawlogs (500 FBM per cord), an estimated 276 350 m^3 (76,283 cords) of roundwood were processed. This wood volume refers only to cut and piled sawlogs. A general rule of thumb is to double the sawlog volume for an estimate of stand volumes harvested to account for logging residues and small stems. With this assumption, approximately 553 000 m^3, or 153,000 cords of standing softwoods were harvested by the industry in 1981/82.

Nearly 50 percent of wood input was purchased either as rough squares or roundwood sawlogs. The average price paid in 1980/81 is presented in Table 7. Prices are estimated for 1981/82 using an index of 9.7 percent.

The sawlog consumption figure of 276 350 m^3 (76,283 cords), results in an estimated value of wood inputs in 1981/82 of approximately $2.97 million, based on round logs. Some of the larger mills purchased rough squares from small push-bench operators for processing into dressed lumber. Therefore, a certain proportion of sawlogs were processed twice, with sawn squares having a higher value than round logs. The survey data did not provide a figure for quantity of squares used.

Table 7. Prices of wood input, 1980 and 1981/82.

Year	Wood Prices				
	Round Logs[1]			Sawn Squares[2]	
	$/cord	$/MFBM	$/m^3	MFBM	$/m^3
1980/81	35.47	96.65	9.79	174.49	73.87
1981/82	38.91	106.03	10.73	194.42	81.04

[1]Based on solid wood volume.

[2]Based on sawn lumber content.

5.0 LUMBER PRICES AND IMPORTS

5.1 Lumber Prices

From survey results, and in further discussion with sawmillers and lumber dealers, average lumber prices were estimated for the period 1977 to 1982 (Table 8). Lumber prices increased from 1977 to 1980, by 35 percent, for both rough and dressed lumber. In 1981, lumber prices fell sharply in response to declining demand for lumber due to the recent recession. Contributing factors included high interest rates which limited new residential construction in the province, and an increase in low priced imported lumber.

In 1982, lumber prices recovered modestly, however, price levels were still below those experienced in 1980. The easing of interest rates from mid-1982, through 1983, had an extremely positive impact on residential construction activity in Newfoundland. As well, the 1983 Federal budget contained several incentives designed to stimulate new construction activity. The increase in demand for lumber

Table 8. Average lumber prices in Newfoundland 1977 to 1982[1].

Calendar Year	Lumber Price					
	Rough Lumber $/m^3	$/MFBM	Percent Change	Dressed Lumber $/m^3	$/MFBM	Percent Change
1977	64	150	-	89	210	-
1978	69	163	8.7	95	225	7.1
1979	76	181	11.0	105	247	9.8
1980	86	202	11.6	120	283	14.6
1981	72	170	-15.8	99	235	-17.0
1982	77	182	7.1	106	250	6.4

[1]Prices are at mill gate.

created a significant response in lumber prices. In the second quarter in 1983, average lumber prices for random dimensions reached as high as $125/m^3 ($295/MFBM) rough, and $161/m^3 ($390/MFBM) dressed. Prices moderated slightly in the fall season, but have firmed up early in 1984.

The absolute price differentials between rough and dressed lumber over the period 1977 to 1982 fluctuated according to market prices (Table 9). The percentage difference in prices, however, remained nearly constant each year. One should note that dressed lumber prices include Federal sales tax.

5.2 Lumber Imports

Newfoundland sawmills currently do not produce a sufficient quantity of lumber to meet domestic requirements. Historically, local mills have served from between one third and one half of the domestic market. Due to the small average size of sawlogs in Newfoundland, local mills cannot supply large dimension lumber in great quantities, such as 2 x 8 or larger widths, and lengths greater than 12 feet.

Table 9. Price differences between rough and dressed lumber in Newfoundland, 1977 to 1982.

Calendar Year	Price Difference $/m^3	Price Difference $/MFBM	% Price Difference[1]
1977	25	60	28
1978	26	62	27
1979	29	66	28
1980	34	81	28
1981	27	65	27
1982	29	68	27
Average	28	67	27.5

[1]Based on dressed lumber price.

A substantial portion of imported lumber also includes smaller dimensions which local mills could manufacture. A potential import substitution of between 13 and 31 percent for small dimension lumber has been estimated (Gray, 1981). Newfoundland mills could therefore potentially replace imported lumber with domestic lumber, ranging from between 12 000 m^3 and 28 000 m^3. This assumes that the local lumber would be of equal quality and price competitive with imports replaced. The present mill structure is capable of supplying this lumber, given sufficient fibre resources. The questionnaire survey collected data on eight hour production capacity, and number of days operated per year, allowing estimates of annual mill capacity to be calculated (Table 10).

Table 10. Annual mill capacity and production in Newfoundland, 1981/82.

Mill Production Class		Rough Lumber Production (m^3)	Annual Mill Capacity (m^3)	% Utilization of Capacity
Small	< 118 m^3	33,328	78,371	43
Intermediate	119 to 236 m^3	14,985	15,280	98
Large	+ 237 m^3	42,575	59,664	71
	TOTAL	90,008	153,315	59

As indicated, the industry operated at only 59 percent of capacity in 1981/82. The greatest potential for increased production lies with the smaller sized mills. One should note that annual capacity is calculated on the basis of one, eight-hour shift per day of operation. Therefore, by running two shifts and/or more days per year, the potential production capacity could be increased. The low utilization of capacity may reflect poor markets and inadequate sawlog supplies in some regions.

Lumber imports were estimated using the following methods. First, statistics are available for lumber shipped to Newfoundland by water, excluding tractor trailer loads (Statistics Canada, Catalogue 54-204). These data are adjusted to account for the fact that only an estimated 90 percent of coastal shipments are recorded. Second, the data must be adjusted to include tractor trailer shipments. Based on unpublished research by the Department of Forest Resources and Lands, the water shipping data underestimate lumber imports by 12 percent. Table 11 presents time-series data on lumber imports, production and consumption. Newfoundland sawmills have supplied an average of approximately

40 percent of the domestic market during the thirteen year period shown. Except for 1978/79 and 1979/80, imported lumber volumes consistently exceed domestic production.

To more fully understand the relationships between lumber imports, domestic production, domestic consumption and lumber prices, Figure 3 is presented.

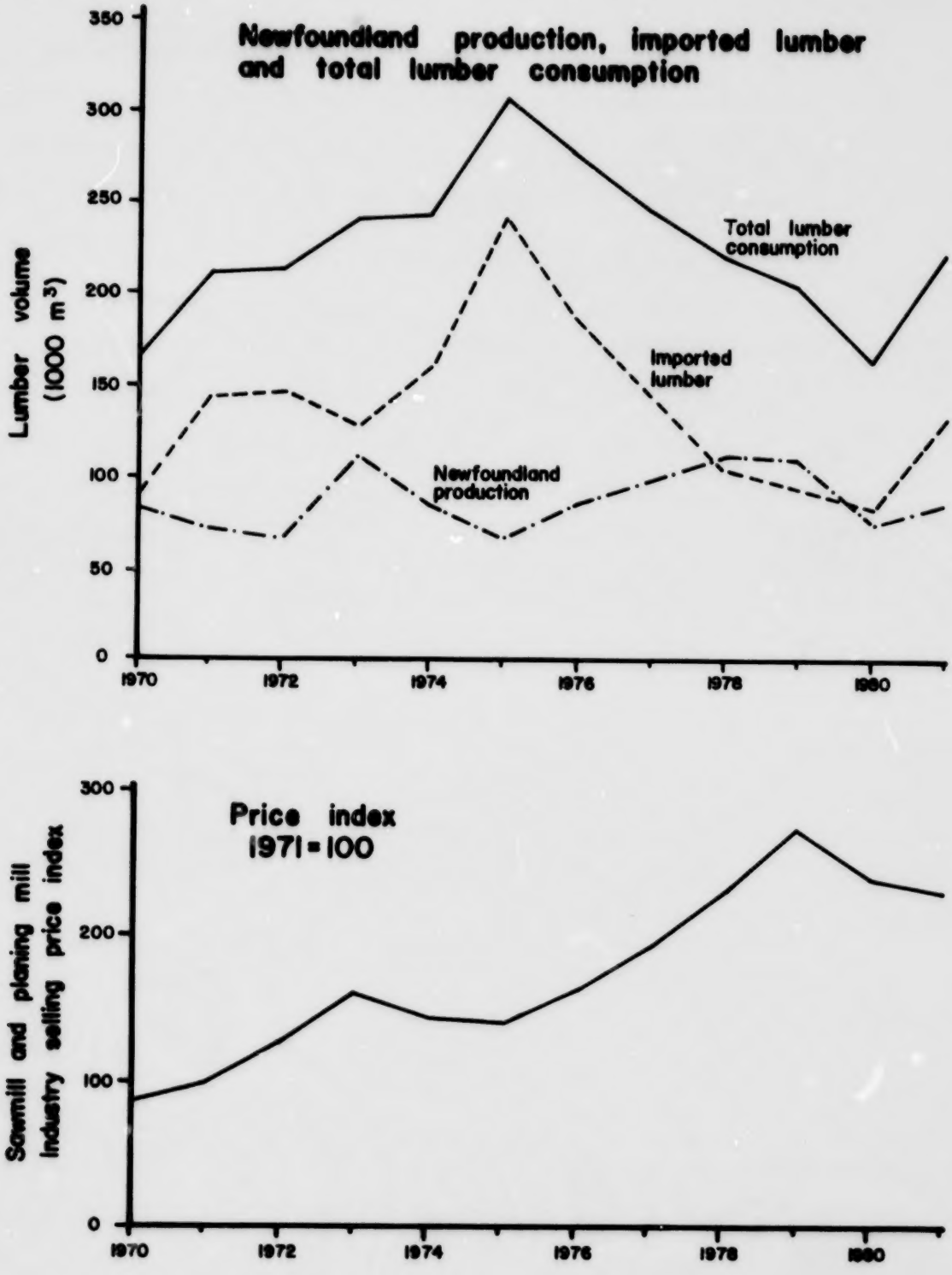
Comparing total lumber consumption (quantity demanded) with the national lumber price index indicates that demand for lumber is inversely related to price. This relationship follows traditional economic demand theory. Therefore, as lumber prices increase, quantity demanded generally declines.

Table 11. Estimated lumber imports and consumption in Newfoundland, 1969/70 to 1981/82.

Year	Nfld. Lumber[1] Production (m^3)	Estimated Imports (m^3)	Estimated[2] Exports (m^3)	Apparent Total Consumption (m^3)	Nfld. Share of Market (%)
1969/70	64,919	108,176	3583	169,512	38.3
1970/71	81,878	87,864	3362	166,380	49.2
1971/72	73,668	142,661	2821	213,508	34.5
1972/73	72,252	149,038	3435	217,855	33.2
1973/74	115,977	128,017	3112	240,882	48.1
1974/75	86,496	158,013	2614	241,895	35.8
1975/76	67,456	244,224	2092	309,588	21.8
1976/77	87,556	192,497	2160	277,893	31.5
1977/78	100,300	148,093	1474	246,919	40.6
1978/79	114,861	107,232	1418	220,675	52.0
1979/80	113,863	99,910	1539	212,234	53.6
1981/82	78,837	85,266	2087	162,016	48.7
Average	88,517	135,746	2440	222,047	39.9

[1]To be consistent, production figures from the Dept. of Forest Resources and Lands were used. As shown earlier in this study, Provincial data underestimate actual lumber production.

[2]Exports consist of dunnage, lumber used as packing material for newsprint shipments.



Lumber consumption, production, imports and price, 1970 to 1981, Newfoundland.

Figure 3 also illustrates an interesting relationship between domestic production and imports (quantity supplied), with respect to total consumption (quantity demanded). As quantity demanded increases (with prices falling), the level of lumber imports increases while domestic production declines. Conversely, as quantity demanded falls (with prices rising), imports are reduced while domestic production expands.

These relationships suggest that Newfoundland sawmills are highly responsive to the prices they receive, a theory supported by Gray (1981) in his study of the Newfoundland forest industry. The remaining questions are why imports generally increase during periods of falling prices and why domestic production declines. There are several explanations. First, during periods of falling prices, large mainland mills likely attempt to reduce their inventories. As their regular markets decline, lumber may be sold in other areas such as Newfoundland. The price of this lumber may be low enough to crowd out local producers. Second, the structure of the Newfoundland sawmill industry is such that many of the smaller mills can shut-down during periods of low prices, since they have minimal fixed costs and do not usually maintain large lumber inventories. Therefore, these mills can more easily weather depressed markets than larger mills, both in Newfoundland and abroad.

There are additional factors however, which can influence lumber supply and demand. For example, periods of high interest rates will have a negative impact on lumber demand and prices. Also, during periods of labour union strikes on the mainland, Newfoundland lumber may be marketed more easily.

From the previous analysis, several conclusions are possible. First, Newfoundland sawmills, especially smaller class mills, have a large capability to increase lumber production, subject to resource and market constraints. Second, increased import substitution, ranging from 13 to 31 percent, is possible for small dimension lumber. Third, Newfoundland sawmills are highly price responsive, increasing production as prices rise. Fourth, during periods of low market prices, the level of imported lumber increases, as large mainland mills reduce their inventories. This imported lumber is often sold at prices below which local mills are willing to sell.

6.0 ECONOMIC IMPACT OF THE SAWMILL AND PLANING MILL INDUSTRY

6.1 Background

The economic impact of the sawmill and planing mill industry on the Newfoundland economy has never been clearly identified. The economic impact is important at both the provincial and regional level, and the industry may assume an important social role in many small rural communities. Government policy makers often wish to understand the economic contributions of a specific industry. This information is required in the formulation of government policies which may affect the industry in question. Such policies include taxation, resource allocation, funding assistance and marketing.

To illustrate the economic impact of the sawmill and planing mill industry, economic indicators are used. No single indicator exists which clearly outlines all the economic and social benefits generated by

a specific industry. Instead, several indicators must be used, the selection of which is dependent upon available information. For this study, the following economic indicators were selected to describe the contribution of the sawmill and planing mill industry to the Newfoundland economy in 1981:

a) Employment

The number of employees and man-years of employment by the industry, consisting of working owners, hired help and unpaid help.

b) Income

Total wages and salaries paid to hired employees, plus earned income of working owners.

c) Capital and operational expenditures

Capital expenditures refer to monies spent by the industry for major equipment such as saws, planers, new buildings, trucks, skidders, etc. Operational expenditures are for fuel and power, materials and supplies, and services used in daily mill operation.

d) Value added

Calculated as the net value of shipments less costs of manufacturing materials and supplies, fuel and electricity, plus or minus inventory changes. Value added thus includes wages and salaries, interest, depreciation, rent and profits. An alternate explanation is that value added measures the increase in value to wood inputs during the manufacturing process.

e) Value of shipments

The selling value of finished products at the plant gate.

f) Replacement value of equipment

The replacement value of equipment is used rather than depreciation or book values since many of the smaller mill operators neither used or understood depreciation methods.

6.2 Direct and Indirect Impacts

For selected economic indicators, usually income and employment, both a direct and indirect component can be calculated. Direct employment is the total number of paid employees in the industry including working owners. Direct income is the wages and salaries earned by these individuals. The expenditure of employee income on goods and services, plus company expenditure on capital and operational items within the province, provides an economic stimulus. The circulation of these monies throughout Newfoundland may generate additional income and employment in retail, service and supply sectors. In this manner, direct impacts may indirectly expand the provincial economy.

Indirect impacts are estimated by applying multipliers to direct employment and income. The calculation of multipliers is a difficult task and is beyond the scope of this study. Multipliers have been estimated for various sectors of the forest industry in similar studies (Tables 12,13), and can be modified to fit the Newfoundland situation, however this approach provides practical estimates only.

Given the structure of the Newfoundland sawmill and planing mill industry (many small, widely-distributed mills) and the seasonal operation of many mills the following provincial multipliers were estimated:

1) Employment multiplier - 1.40

2) Income multiplier - 1.35

Table 12. Employment multipliers.

Location	Industry Sector	Multiplier	Study Source
Ontario	Sawmills/Planing Mills	1.63	Ministry of Natural Resources, 1981
Alberta	Small Sawmills	2.35	Ondro and Williamson, 1982

Table 13. Income multipliers.

Location	Industry Sector	Multiplier	Study Source
Alberta	Fibreboard mill	1.49	Carroll & Milne, 1982
Scotland	Pulp & paper	1.44 to 1.54	Greig, 1971
Scotland	All forestry sectors	1.24 to 1.54	Brownrigg, 1971

These multipliers infer that for every 1.0 direct man-year of employment in the sawmill and planing mill industry, an additional 0.40 man-years are generated in other sectors of the provincial economy. Also, for every $1.00 in direct income, an additional $0.35 is generated throughout the economy as these monies are circulated.

In the following sections describing economic impacts, reference is made to the various production ratios calculated from the 1980 survey data. These ratios are on a per m^3 of production basis. Therefore, by knowing total industry production, one can use the ratios to calculate employment, income, expenditures, etc., for the industry. Where these pertain to dollar values, the ratios have been updated to 1981 by applying a relevant price index. Appendix E lists all production ratios used in this study.

6.3 Employment

Based on the employment ratios of 0.004921 per m^3 for full-time workers, and 0.004457 per m^3 for part-time workers, there were 443 full-time and 401 part-time employees in 1981/82. Also, one must include the 1679 mill owners as labour, since virtually all owners work in their businesses in some capacity. Assuming part-time employees work 50 percent of available hours, and a full working year of 250 days, direct employment was 1356 person-years in 1981. The total industry employment includes both logging and milling.

Applying the employment multiplier of 1.40 to the direct employment figure of 1,356 person-years results in indirect employment of 542 person-years. Thus, total direct plus indirect employment was 1893 person-years in 1981/82. An analysis of industry expenditure data indicated strong linkages between the sawmilling sector and petroleum products, equipment service and finance sectors. Therefore, indirect employment impacts are stronger in these sectors of the economy.

6.4 Income

Total industry income is calculated as the payroll for mill employees plus the earned income by working owners. Applying the income ratios to total production for 1981/82 results in the following income estimates:

Total payroll for mill employees	$3,214,987
Total earned income by owners	2,021,894
Total Industry Income	$5,236,881

By applying the income multiplier of 1.35 to the direct income figure, indirect income for 1981/82 was $1,832,908. Therefore, total direct plus indirect income was $7,069,789. The average income per person-year was $3,862. One should note that average incomes will vary considerably over the seven mill classes. Obviously, as mill production decreases, the total gross income earned by mill employees and owners will also decline (Table 14).

Table 14. Average employee and owner income by class in Newfoundland, 1981/82.

Mill Production Class		# Days Mill[1]	Average Income	Average Earned
Class	Production	Operates	Per Employee ($)[2]	Owner Income ($)[3]
1	< 24 m^3	58	2265	164
3	60 to 118 m^3	116	3811	4223
5	178 to 236 m^3	219	6069	7904
7	> 1180 m^3	153	9047	21882

[1]The 58 days operated by class 1 mills to produce less than 24 m^3 of lumber is quite high and indicates that a day of operation is only a few hours on average. Days operated by class 3, 5 and 7 mills are realistic given average production rates and reflect a full operating shift.

[2]For paid employees, full time, on a man-year basis.

[3]Data from survey question on owner income (excluding wages).

Income increased with mill size according to production and operating days per year (Table 14). For paid employees, an average hourly wage rate was $4.56 per hour. The provincial average yearly income per employee for all manufacturing industries in 1981 was $16,736

(Nfld. Statistics Agency, 1982). Therefore, incomes of paid employees in the sawmill/planing mill industry were well below the provincial average. For mill owners, only those in the large class 7 mills earned incomes above the provincial average. The survey collected data on the percentage of mill owners earning income from other sources (Table 15).

Table 15. Percentage of Newfoundland mill owners receiving income from other sources.

Mill Production Class	Percentage of Owners Earning Other Income (%)	Most Common Source of Other Income
1) < 24 m^3	100	Fishing (44%)
2) 25-59 m^3	75	Fishing (67%)
3) 60-118 m^3	85	Fishing (50%)
4) 119-177 m^3	67	Fishing (40%)
5) 178-236 m^3	67	Fishing (50%)
6) 237 to 1180 m^3	46	Fishing (36%)
7) +1180 m^3	25	Construction (50%)
Overall	71	Fishing (46%)

The percentage of mill owners engaged in other form of income-earning activities decreased as mill size expands. The most common alternate occupation was fishing (46%). Therefore, sawmilling is only one contributor to annual income. As mill output increases, owners tend to rely less on other forms of employment to maintain a comfortable standard of living.

6.5 Company Expenditures

a) Capital Equipment

The sawmill and planing mill industry spent an estimated $1,363,342 on capital equipment in 1981. On the average, 36.5 percent or $497,620 was spent within 50 km of individual mills. Table 16 presents more detailed information on capital equipment and expenditures.

Table 16. Capital equipment and expenditure for the Newfoundland sawmill and planing mill industry, 1981/82.

Parameter	Mill Size Class (m^3)			
	< 24	60-118	178-236	+1180
a) Capital expenditure/ mill ($)	304	1,113	1,493	27,605
b) Local expenditure/ mill ($)	111	416	711	10,076
c) Total replacement value, mill equipment and buildings ($)	4,291,331	3,170,437	2,788,141	1,319,024
d) Replacement value of (c) per mill ($)	3,492	28,822	61,959	164,878
e) Percentage of mills with mill equipment in good condition (%)	81	60	67	80
f) Total replacement value of logging equipment	6,327,902	5,824,185	3,560,443	2,085,355
g) Replacement value of (f) per mill ($)	5,148	52,947	79,121	260,669
h) Percentage of mills with logging equipment in good condition	60	81	83	83

There was a wide range in capital value (mill plus logging equipment) from mills in class 1, to those in class 7, ($8640/mill to $425,547/mill). The value of total capital expenditures to the provincial economy, while important, does not comprise a major stimulus. Also, the majority of expenditures are not directed towards businesses in the local mill vicinity; however, in certain regions with a concentration of mills, capital expenditures are likely a major local benefit.

b) Operational Expenditures

A total of $2.9 million was spent by the industry on operational items (Table 17).

Table 17. Operational expenditures for the Newfoundland sawmill and planing mill industry, 1981/82.

Expenditure Item	Total Expenditure ($)	% of Total Expenditure (%)	% Spent Locally (%)	Local Expenditure ($)
a) Fuel & Power				
Fuel, lubricants	666,812	23	92	613,467
Electricity	332,836	11	0	0
b) Materials & Supplies				
(excluding wood)	145,893	5	50	72,947
c) Services				
Hired transportation	224,938	8	70	157,456
Insurance	104,559	4	69	72,146
Equipment rental	75,139	2	100	75,139
Interest	369,212	13	76	280,601
Maintenance, repair	565,967	19	66	373,538
Other	438,414	15	70	306,890
TOTAL	2,923,770	100	67	1,952,184

Strong linkages existed with the petroleum products and maintenance/repair sectors. Of the $2.9 million in operational expenditures in 1981/82, nearly $2.0 million flowed to local businesses within 50 km of individual plants. At the regional level, these expenditures are important, especially in areas containing a large number of mills. Since a major portion of local expenditures are for services (65%), a high proportion of these monies likely remained within the region, increasing income levels over a longer period of time.

Operational expenditures by mill class were collected in the survey (Table 18).

Table 18. Operational expenditures by mill class in Newfoundland, 1981/82.

Expenditure per mill ($)	Mill Class			
	< 24 m^3	60 to 118 m^3	178 to 236 m^3	+1180 m^3
Fuel & Power	77	984	2147	25,317
Materials & Supplies	9	179	311	4,343
Services	55	1116	2421	44,977
Other	14	65	3258	10,052
TOTAL	155	2344	8137	84,689

Source: Appendix G

Expenditure per mill increased as mill size expands, which is expected. Of interest, however, is the wide range between class 7 mills and those in smaller classes. These data illustrate the regional economic importance of the large class 7 mills, however conglomerations of many smaller mills in one area will also have a significant impact.

6.6 Value Added

Total value added is calculated by subtracting from gross sales revenue, costs of wood input, transportation of lumber, fuel and power, materials and supplies, maintenance and repair. Value added includes depreciation, incomes, taxes, company paid employee benefits, insurance, leasing or rental costs, other miscellaneous costs and a residual for profit. To estimate value added for milling and planing only, the cost of harvested and purchased wood must be subtracted. Approximately 50 percent of the wood (roundwood or rough squares) was purchased in 1981/82. The average price, estimated for 1981/82 was $10.73 per m^3. To deduct costs for company harvested wood, 50 percent of certain operational costs were excluded, such as fuel and lubricants, maintenance and supplies, and equipment rental. Calculations are shown in Appendix D.

The total value added for the sawmill and planing mill industry was an estimated $3,517,833 for 1981/82. Combining this figure with other selected indicators in this report provides the following value added estimates:

Value Added/m^3 Lumber Production	$39/$m^3$
Value Added/Person-Year Employment	$2594/person-year
Value Added/$1.00 Value of Shipments	$0.40/$1.00 value of shipments

6.7 Other Economic Impacts

An additional economic impact derived from the sawmill and planing mill industry is the generation of public revenues. These include corporate income tax, retail sales tax and provincial fuel taxes paid by the firms. As well, personal income taxes and retail sales

taxes are collected from mill owners and employees through personal expenditures. The survey omitted questions on taxes due to their sensitive nature.

Following methods used in a previous study of Newfoundland forest industry public revenues (Milne, 1981), the following estimates are presented for the sawmill and planing mill sector, 1981/82:

Provincial taxes paid by companies	$291,000 to $339,000
Provincial taxes paid by employees/owners	331,000 to $383,000
Provincial stumpage and licence fees	184,000 to $244,000
	$806,000 to $966,000

These estimates are sensitive to the many assumptions required. The range in public revenues reflects the application of different sets of assumptions. The reader is reminded that taxes are collected for general revenues and redistribution to the population as a whole. Thus, one should not view taxes as an economic benefit, or equate the amount of taxes the industry pays with the level of direct government services received.

These public revenues represented approximately one tenth of one percent of provincial public revenues in 1981/82. Therefore, while sawmill and planing mill industry public revenues are a positive impact they do not constitute a major contribution to provincial revenues.

Locally, the industry provides an important source of employment and income. As well, municipal taxes and fees are collected from the industry for local redistribution. There are no individual mills in the province large enough to sustain the economy of a single community, however, there are several regions where many mills are concentrated.

For example, in Unit 2, Bonavista Peninsula, where there are more than 500 mills, the regional economy greatly benefits from the aggregated impact of these mills (Milne, 1982). Therefore, while the magnitude of the industry in Newfoundland may not seem large in comparison with pulp and paper, or mining for example, the regional economic impacts can be substantial. With alternative employment opportunities lacking in many rural areas, the maintenance of a healthy and stable sawmill industry is important.

6.8 Summary of Economic Impacts

This chapter has provided estimates of the major economic impacts generated by the Newfoundland sawmill and planing mill industry in 1981/82. When grouped together (Table 19) these impacts indicate the overall importance of the industry to the provincial economy.

Table 19. Summary of economic impacts for the Newfoundland sawmill and planing mill industry, 1981/82

Economic Variable	Impact
a) Direct employment	1,356 person-years
b) Indirect employment	542 person-years
c) Direct income	$ 5,236,881
d) Indirect income	$ 1,832,908
e) Capital expenditures	$ 1,363,342
f) Operational expenditures	$ 2,923,770
g) Replacement value of mill/equipment	$41,815,507
h) Value added	$ 3,517,833
i) Value of shipments	$ 8,808,723
j) Public revenues	$ 806,000 to $966,000

7.0 TIME SERIES ANALYSIS AND INTER-INDUSTRY COMPARISONS

7.1 Time Series Analysis

Data are available from Statistics Canada (Catalogue 25-202) on the Newfoundland sawmill and planing mill industry. These data, however, only include approximately 54 of the larger establishments thereby omitting more than 1600 smaller operations. As explained in chapter one, a major objective of this report is to present statistics on the entire range of mills actually existing in Newfoundland. The survey provided these data but only on a cross-sectional basis. It is useful to also examine changes occurring in the industry over a period of time. At present, Statistics Canada is the only source of published time series data available on the Newfoundland sawmill and planing mill industry. Despite their limitations, these data allow an analysis of changes in industry costs, revenues, employment and income over time (Table 20).

Table 20. Annual average percentage changes in seven economic indicators, Newfoundland sawmill and planing mill industry, 1971 to 1980.

Economic indicator	Annual Average Percentage Change 1971 to 1980	
	Nominal[1]	Real[2]
1) Cost of fuel and electricity per mill	20.1	11.0
2) Cost of materials and supplies per mill	19.2	14.3
3) Value of shipments per mill	10.9	-0.1
4) Total wages and salaries per mill	6.2	-2.9
5) Total value added per mill	12.7	-0.4
6) Average income per employee	10.6	1.1
7) Number of employees per mill[3] - 3.6		

[1]Calculated from current values which include inflation.

[2]Calculated from deflated values which exclude inflation.

[3]This is a non-monetary value which is neither expressed in nominal or real terms.

The six monetary indicators (1 to 6) are presented in both nominal and real terms. Real or "deflated" indicators were calculated using appropriate price indices supplied by the Newfoundland Statistics Agency. The six nominal indicators show that operating costs increased at a greater rate than value of shipments over the ten year period. The real monetary values (excluding inflation), also illustrate that value of shipments did not keep pace with costs. In real terms, wages and salaries, value of shipments and value added were negative, which indicates they increased less than inflation. Average income per employee was positive albeit low. The average annual decline in employees per mill indicates substitution of capital for labour. The decline in employment is also reflected in the fact that average income per employee increased at a greater rate than total wages and salaries.

7.2 Inter-industry Comparisons

A comparison of the sawmill and planing mill industry with other forest industry sectors in the province is possible using published data (Table 21). In terms of total values, the sawmill and planing mill industry ranks lowest except for employment. The inclusion of well over 1000 small push-bench mills contributes to the low average industry income and value added. The average values also indicate the sawmill and planing mill industry is highly labour intensive compared to the other three sectors. The data illustrate a wide range between the four economic indicators selected to compare the different industry sectors. The pulp and paper industry is by far the highest value forestry sector in the province.

Table 21. Newfoundland sawmill and planing mill industry compared to other forestry sectors, 1981.

Economic variable	Forestry Sector: Sawmills and planing Mills[1]	Woodworking industry[2]	Logging industry[3]	Pulp and paper industry[4]
A. Total Values				
1) Employment (person-years)	1,356	521	1,580	2,981
2) Total income ('000 $)	5,237	9,442	33,254	90,208
3) Total value added ('000 $)	3,518	20,754	52,324	194,049
4) Value of shipments ('000 $)	8,809	33,768	89,422	353,000
B. Average Values				
5) Employment per $1000 shipments	.154	.015	.018	.008
6) Value added per $1.00 shipments	.399	.615	.585	.550
7) Value added per person-year employment	2,594	39,835	33,116	65,095
8) Income per person-year employment	3,862	18,123	21,047	30,261

[1]Source: NeFRC survey, data for 1981.

[2]Source: (Milne and Mallay, 1983); data for 1981.

[3]Source: Statistics Canada, 25-202, annual; data for 1981. Includes paper company logging operations and several large, independent logging contractors.

[4]Source: Statistics Canada, 25-202, annual; data for 1981. Data refer to paper company mill operations.

Another useful analysis is to compare the sawmill and planing mill sector with major non-forestry manufacturing industries, for example fish products, as well as total manufacturing (Table 22).

Table 22. Newfoundland sawmill and planing mill industry compared to fish products and total manufacturing, 1981.

Economic Variable	Sector		
	Sawmills and Planing Mills	Fish Products[1]	All Manufacturing Industries[2]
1) Employment/$1000 shipments	.154	.025	.016
2) Value added/$1.00 shipments	.399	.467	.510
3) Value added/person-year employment	$2,594	18,553	31,678
4) Income/person-year employment	$3,862	16,052	17,053

[1]Source: Statistics Canada. Data for 1980, adjusted to 1981.

The sawmill and planing mill industry is highly labour intensive when compared to both fish products and total manufacturing. The indicators incorporating income and value added show the sawmill and planing mill industry ranking well below the provincial averages for manufacturing.

8.0 ADDITIONAL STATISTICS

The 1981 survey collected a wide range of data on the Newfoundland sawmill and planing mill industry. Additional to the data that have already been presented several statistics are of sufficient interest and importance to be included.

These data are self-explanatory and address a major objective of this report, to provide information on the industry.

Table 23. Mill ownership.

Mill Ownership	Percent
Single Owner	76
Partnership	19
Corporation	5

The majority of mills in classes 6 and 7 were partnerships and/or corporations while single owners dominated smaller classes.

Table 24. Source of financing.

Financing source	Percent
Federal loans	6
Provincial loans	13
Banks, finance companies	25
Personal savings	55
Friends, relatives	1

Larger mills (classes 6 to 7) tended to obtain most of their financing from commercial institutions. Smaller mills, on the other hand, obtained financing mostly from personal savings. Two trends are clear; first, the small capital requirement of a push-bench mill lends itself to single owners financing from personal savings. Second, larger, more sophisticated mills require pooling of capital through a partnership or corporate borrowing from commercial institutions.

Table 25. Questionnaire responses regarding wood supply, sawmill residues and a sawmill association.

Question	Percent yes	Percent no
1) Is your wood supply adequate?	28	72
2) Do you sell sawmill residue?	34	66
3) Willing to join a Newfoundland sawmill Association?	65	35

No clear trends were evident regarding mill size for questions one and two. For question three, however, the percentage of mill owners willing to join a province-wide association increased in relation to mill size. More than 80 percent of mills in classes 5 to 7 expressed a desire to join an association.

9.0 PROBLEMS AND OPPORTUNITIES

9.1 Background

The questionnaire survey, analysis of data, and discussions with sawmillers identified four major problems which limit the development and efficiency of the industry. These problems are presented in the following section.

9.2 Sawlog Supply

The survey indicated 72 percent of mill owners felt they had inadequate sawlog supplies. This trend was particularly evident in eastern Newfoundland. Many mill owners stressed that while merchantable stands were available, there were inadequate supplies of high quality sawlogs. Reasons include lack of access in some regions, spruce budworm damage in balsam fir stands, and too

many mills in other regions for the available supply. This problem suggests that the industry and government must begin to address questions such as planning for long-term sawlog supplies, limiting mill expansion in certain regions, controlling illegal cutting on Crown lands and improving logging practices.

9.3 Technology Transfer

The industry does not appear to have easy access to information on new equipment, production techniques, mill layout, maintenance and repair, grading, and quality control. This type of information is required to increase mill efficiency, fibre utilization and profitability. Sources of information include trade journals, research reports and lumber association bulletins from other regions of Canada and the United States. Given the structure of the Newfoundland industry with a large number of small, widely distributed mills, technology transfer rarely reaches individual owners.

The recent formation of a Newfoundland Lumber Producers Association (NLPA) is a first step in addressing the problem of technology transfer. The Association currently has approximately 80 member mills in the larger production classes (5, 6 and 7). These classes contain the majority of full-time operations which can both afford and benefit most from new technology. As the Newfoundland association expands, the task of directing information to the industry will be facilitated. Stronger Government actions, however, may be required to assist the technology transfer process. First, Government (provincial and/or federal) agencies

can act as an initial liaison between the NLPA and outside sources of information. A major step would be the identification of information sources of new technology such as FORINTEK, other industry associations, trade journals, etc., and a list compiled for the NLPA.

Second, a small industry trade show could be organized by Government in cooperation with the NLPA. The exhibition should introduce technology that the Newfoundland industry can adopt.

Third, funding programs for new mill technology may need to be strengthened to assist the industry in adopting new technology. Funding programs for logging equipment have been available; however, many mill owners expressed concerns over the availability of financial assistance for mill equipment.

9.4 Marketing

Newfoundland mills have generally experienced problems in marketing lumber in competition with imported lumber from the mainland. The structure of the industry in Newfoundland is again a constraining factor. Mill owners in many cases are unaware of lumber prices, not only across Canada, but within different regions in Newfoundland. A wide range in lumber prices existed across the province from 1977 to 1980. The high degree of sales competition among Newfoundland mills and the lack of knowledge on lumber prices, provided major lumber buyers with a monopsony situation.

A further factor affecting markets is lumber quality. While grading standards exist, some mill operators (especially in small mills) are unaware of these and consequently may produce lumber below grading

standards. As well, given the poor technology in many mills, lumber quality may be poor in terms of consistent dimensions. A further factor is poor sawlog quality in some regions, particularly eastern Newfoundland where sawlog supply is tightest. A net result of these factors is local lumber which may be of poorer quality than imported supplies. Lower prices are an obvious consequence.

Improvements to lumber grading, quality control and marketing may be initiated through strategies outlined previously. The development of an industry association has allowed member mills to share information on market prices and increase market power. Introduction of new technology and wider use of grading standards should improve lumber quality.

9.5 Management and Accounting

A problem shared with other industries in Newfoundland consisting of many small, independent firms is weak management and accounting skills. Examples in the sawmill and planing mill industry include a lack of depreciation methods, poor record-keeping and inadequate information on unit operating costs. Some of the larger mills had excellent accounting and financial management skills, however, many firms appear to require assistance in these areas. In the past, a lack of an industry association limited mill owners in gaining assistance through seminars, etc., however the newly formed NLPA should aid in resolving this situation. Help is available from organizations such as the Federal Business Development Bank, or commercial lending institutions.

10.0 SUMMARY

This report presents a detailed analysis of the Newfoundland sawmill and planing mill industry. Statistics are presented for 1981/82 based on a questionnaire survey in 1981 as well as several published and non-published sources.

More than 1700 sawmills were licenced in 1981/82, producing an estimated 90 088 m^3 of rough lumber. Approximately 42 percent, or 37 873 m^3 of lumber was planed into dressed production. Allowing for custom work and personal consumption, approximately 78 percent of total rough production, or 70 268 m^3, was sold commercially in Newfoundland in 1981/82. The value of total rough and dressed production was approximately $8.8 million.

The industry used approximately 276 000 m^3 (76,283 cords) of sawlogs in 1981/82. Nearly 50 percent of wood input is purchased by mills in the form of logs or rough squares. Estimated prices in 1981/82 were $10.73 per m^3 ($38.91 per cord) for logs and $81.04 per m^3 ($194.42 per MFBM) for rough squares.

Lumber prices have fluctuated greatly during the period 1977 to 1982 in response to changing market conditions. The recent recession, coupled with increased lumber imports greatly reduced domestic lumber prices. During 1983, lumber prices rose dramatically from previous levels in response to easing interest rates and increased residential construction. Newfoundland mills compete with mainland mills for

domestic sales of small dimension lumber. Historically, local mills have supplied between 33 and 50 percent of the domestic market. Import levels tend to increase during periods of lower market prices. The potential appears to exist for increasing the market share of local mills since the Newfoundland industry operated at less than 60 percent capacity in 1981/82, however gaining access to additional sawlog supplies may be a constraint.

The sawmill and planing mill industry makes an important contribution to the Newfoundland economy, especially in regions where mills are concentrated. Given the lack of alternative employment and income opportunities in many rural areas, the maintenance of a healthy and stable sawmill industry becomes an important goal. Overall, an estimated 1356 person-years of employment, including mill owner-operators, was generated in 1981/82. The total value of incomes was approximately $5.2 million. Total capital and operational expenditures by the industry were $4.2 million.

Applying appropriate multipliers provides estimates of the indirect or "spin-off" impacts. For 1981/82, indirect employment was 542 person-years, and indirect income $1.8 million. These indirect economic benefits arise from direct employment, income and expenditure by the industry. Sectors most strongly impacted are the petroleum industry and the service industries such as equipment repair firms and commercial lending institutions. Additional economic impacts estimated for 1981/82 are value added; $3.5 million, and public revenues (taxes, fees, etc.); $806,000 to $966,000.

Compared to other forestry sectors in the province (logging, woodworking, pulp and paper), the sawmill and planing mill industry is the most labour intensive. In terms of total income, value added and value of shipments, however, the industry had the smallest impact. Compared to total provincial manufacturing sector, the sawmill and planing mill industry is below the provincial average for income and value added per person-year of employment, reflecting the inclusion of over 1000 small, part-time operations. The average values derived from an analysis of only larger, full-time mills would be significantly higher than those calculated for the entire sawmill and planing mill industry.

An analysis of Statistics Canada data over the period 1971 to 1980 was conducted. These data included mainly the larger mills in classes 6 and 7 and showed that in real terms, value of shipments did not keep pace with costs. Real average incomes had a positive but small percentage increase.

Four major problems of the industry were identified, due mainly to the wide distribution of many small independent operators. The problems are: 1) inadequate sawlog supplies; 2) lack of technology transfer; 3) poor marketing; and, 4) inadequate accounting/management skills. The recent formation of a Newfoundland Lumber Producers Association is an important first step in addressing these concerns. Stronger technical and financial support by government agencies in Newfoundland may also be necessary if the industry is to become a more productive and stable sector of the economy.

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APPENDIX A

Definition of Sawmill and Planing Mill Industry

The forest industry is defined by the Canadian Standard Industrial Classification (Statistics Canada: Catalogue 12-501E). This classification system separates the forest industry into the following sectors:

FORESTRY

- 031 Logging
- 039 Forestry Services

WOOD INDUSTRIES

- 251 Sawmill, Planing Mills and Shingle Mills
- 252 Veneer and Plywood Mills
- 254 Sash, Door and Other Millwork Plants
- 256 Wooden Box Factories
- 258 Coffin and Casket Industry
- 259 Miscellaneous Wood Industries

PAPER AND ALLIED INDUSTRIES

- 271 Pulp and Paper Mills
- 272 Asphalt Roofing Manufacturers
- 273 Paper Box and Bag Manufacturers
- 274 Miscellaneous Paper Converters

For this report, the sawmill and planing mill industry refers to SIC group 251.

APPENDIX B

Questionnaire Survey Form CONFIDENTIAL

The information you provide will be kept confidential and will be used for statistical purposes only. Individual information will not be available. Please do not put your name anywhere on the questionnaire, however, in the event we need to contact you regarding information on the questionnaire, please put your phone number in the space below.

NEWFOUNDLAND SAWMILL AND PLANING MILL INDUSTRY QUESTIONNAIRE

Mill Number: _____ Date: _____

Phone Number: _____

I. GENERAL INFORMATION

1.1 Did your mill operate in 1980? (Check one)

a) ____ No → Please return this questionnaire, there is no need to answer any further questions.

b) ____ Yes ↓ Proceed to questions below.

1.2 In 1980, how much lumber did your mill produce?

a) Rough: _____ Thousand Board Feet

b) Dressed: _____ Thousand Board Feet

1.3 What type of mill ownership do you have? (Check one)

a) Single owner ____

b) Partnership ____

c) Corporation ____

1.4 Did your mill buy any of its wood supply (logs or squares) from other cutters in 1980? (Check one)

a) _____ No → Proceed to question 1.7.

b) _____ Yes ↓ Answer all remaining questions on this page.

1.5 What percentage of your wood supply (logs or squares) was bought from other cutters? (Applicable to 1980 only for this percentage).

_____%

1.6 Can you estimate the average price you paid in 1980 to buy logs or squares from other cutters?

a) Logs: $_____/cord or $_____/1000 Board Feet Sawn Lumber

b) Squares: $_____/square or $_____/1000 Board Feet Sawn Lumber

1.7 In 1980, what type of operation did you have? (Check one)

a) _____ All production was for own use → Please answer Sections IV, V and VI only, beginning on page 7.

b) _____ Some or all production was sold → Please answer the rest of the questionnaire, starting with Section II, next page.

II. MANUFACTURED PRODUCT INFORMATION

In this section, we hope to collect information regarding the types of products manufactured by the sawmill industry, the value of these products in the provincial economy, and where the products are sold.

2.1 Did your mill produce any products other than lumber in 1980? (Check one)

a) No → Proceed to question 2.2

b) Yes
↓

Could you list them here and estimate how much of each product you produced and the average price you sold them for?

	Product	Quantity	Price Received
1)	_____	_____	_____
2)	_____	_____	_____
3)	_____	_____	_____
4)	_____	_____	_____

2.2 In 1980, did your mill produce dressed lumber? (Check one)

a) ____ No → Proceed to question 2.4.

b) ____ Yes Continue with question 2.3 below.
↓

2.3 What was the average price per thousand board feet you received for dressed lumber?

1980 $_____/thousand board feet

1979 $_____/thousand board feet

1978 $_____/thousand board feet

1977 $_____/thousand board feet

2.4 What was the average price per thousand board feet you received for <u>rough</u> lumber?

1980 $_____/thousand board feet

1979 $_____/thousand board feet

1978 $_____/thousand board feet

1977 $_____/thousand board feet

2.5 What percentage of your total production in 1980 was for your own use?

a) Rough _____%

b) Dressed _____%

2.6 What percentage of your total production in 1980 was custom sawing or planing for people supplying their own lumber?

a) Rough _____%

b) Dressed _____%

2.7 What percentage of your total production in 1980 was sold within your local area? (20 to 30 miles from your mill)

a) Rough _____%

b) Dressed _____%

2.8 What lengths did you sell most of your lumber in 1980?

a) Rough _____feet

b) Dressed _____feet

2.9 Under good operating conditions, how much lumber could your mill produce in one eight hour shift?

a) Rough _____board feet

b) Dressed _____board feet

III. EMPLOYMENT AND INCOME

3.1 Did you have any paid employees (not including yourself) who worked for you in 1980? (Check one)

a) No _____ → Proceed to question 3.2.

b) Yes ____
↓

c) How many were 1) Full time? ____ (worked all the time)

2) Part time? ____ (hired when needed)

d) What was your total payroll in 1980 including income earned by any partners? $_____

3.2 Did you have any unpaid help in 1980 (friends, family)? (Check one)

a) No ____ → Proceed to question 3.3.

b) Yes ____
↓

c) How many were 1) Full time? ____ (worked all the time)

2) Part time? ____ (worked when needed)

3.3 Did you yourself do any other kinds of work in 1980? (Check one)

a) No _____ → Proceed to question 3.4.

b) Yes ____ (Check the one box below which most strongly applies)
↓

1) Fisheries ____

2) Other forestry work ____

3) Mining ____

4) Road building ____

5) Construction ____

6) Work in shop or store ____

Cont'd next page ...

7) Pensioner ____

8) Farming ____

9) Welfare or unemployment insurance ____

10) Other (please specify) ____ _____

3.4 Can you estimate the total number of days you personally worked at sawmilling in 1980?

_____ days

3.5 What is the average length of one daily working shift?

_____ hours

3.6 Can you estimate your personal earned income from sawmilling in 1980?

$_____

IV. CAPITAL EQUIPMENT

4.1 How did you acquire your sawmill? (Check one)

a) Purchased new ____

b) Purchased used ____

c) Inherited ____

4.2 Does any major mill equipment need to be replaced? (Check one)

a) Yes ____

b) No ____

4.3 In general, is your mill equipment either? (Check one)

a) Good condition _____

b) Poor condition _____

4.4 If your entire mill (buildings, saw, planer, etc.) was destroyed, how much would it cost to replace with new equipment and materials?

$_____

4.5 If all your logging equipment (trucks, skidders, chain saws, etc.) were destroyed, how much would it cost to replace with new equipment?

$_____

4.6 Is your logging equipment used entirely for your logging and milling operation? (Check one)

a) Yes ____

b) No ____

4.7 For expenditures on sawmill, planing mill and/or logging equipment, where do you usually obtain your financing? (Check one)

a) Federal Government loans _____

b) Provincial Government loans _____

c) Banks, finance companies _____

d) Personal savings _____

e) Friends, relatives _____

4.8 Did you purchase any major mill or logging equipment in 1980? (e.g. saw blades, planer knives, tires, spare parts, etc.) (Check one)

a) No ____

b) Yes ____
↓

c) Could you estimate how much you spent in 1980 and the percentage which was spent in your local area? (20 to 30 miles from your mill).

Amount spent in 1980 $_____

% spent in local area _____%

V. OPERATING EXPENDITURE INFORMATION

The information collected in this section refers to the day-to-day expenditures made for your mill and logging operation. For each item listed in the following table, please estimate how much you spent in 1980 and the percentage spent in your local area (20 to 30 miles from your mill). If you made no expenditures on a particular item listed, simply mark an "0" in the blank next to the question.

Item Purchased	Total Amount You Spent in 1980 for Item ($)	Percentage of Total Spent Which You Made to Local Businesses in Your Area (%)
5.1 Power		
a) Fuels & Lubricants	_____	_____
b) Electricity (if any)	_____	Newfoundland Light & Power
5.2 Materials & Supplies (Not Including Wood)		
e.g. (wire strapping, office supplies, files, belting etc.)	_____	_____
5.3 Services		
a) Hired Transportation for Your Lumber	_____	_____
b) Insurance on Mill & Equipment	_____	_____
c) Equipment Rental	_____	_____
d) Interest Charges on Loans For Your Business	_____	_____
e) Saw Repair, Sharpening etc. Skidder, Truck Maintenance etc.	_____	_____
f) Other	_____	_____

VI. MISCELLANEOUS INFORMATION

This section will be used to provide additional, important information on the Newfoundland sawmill and planing mill industry.

6.1 Do you have an adequate supply of wood for your sawmill? (Check one)

a) Yes ____

b) No ____

6.2 Do you sell wood residues from your sawmill to individuals wishing to burn them as a heat source in their homes? (Check one)

a) Yes ___

b) No ___

6.3 What are your plans for 1982, based upon your production levels and sales over the past two years? (Check one)

a) Expand production ____

b) Keep producing at same level ____

c) Decrease production ____

d) Shutdown operation ____

6.4 Would you be willing to join a Newfoundland Sawmill Association for a small annual fee? (20-30 dollars/year)

a) Yes ____ b) No ____

If you have any difficulties with this questionnaire, please feel free to call Grant Milne of the Canadian Forestry Service in St. John's. Call collect, at 737-4684 during business hours for assistance. Your help in providing information by filling out and returning this questionnaire is greatly appreciated. The entire sawmill industry in Newfoundland will benefit from information received from questionnaires.

APPENDIX C

Lumber Production by Mill Class and Management Unit - 1981/82[1]

Unit Number	Class 1 0 to 24 (m^3)	Class 1 No. of Mill	Class 2 25 to 59 (m^3)	Class 2 No. of Mill	Class 3 60 to 118 (m^3)	Class 3 No. of Mill	Class 4 119 to 177 (m^3)	Class 4 No. of Mill	Class 5 178 to 236 (m^3)	Class 5 No. of Mill	Class 6 237 to 1180 (m^3)	Class 6 No. of Mill	Class 7 > 1180 (m^3)	Class 7 No. of Mill	Total m^3 Products	Total No. of Mills	Returns Outstanding
1	1128	152	941	25	1352	15	272	2	1112	6	2719	7	0	0	7523	207	10
2	2460	380	1622	45	2312	25	1918	13	3371	17	3419	8	0	0	15101	488	26
3	109	27	321	8	118	1	0	0	0	0	0	0	0	0	548	36	2
Sub-Total Eastern Region	3696	559	2884	78	3782	41	2189	15	4483	23	6137	15	0	0	23172	731	38
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5	358	71	500	13	520	7	596	4	0	0	718	2	6972	4	9663	101	6
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	92	12	93	3	393	4	0	0	211	1	2789	4	0	0	3579	24	0
8	535	83	564	14	929	9	986	7	895	4	5131	12	1535	1	10574	130	7
9	479	78	448	13	860	10	473	3	1224	6	1235	3	0	0	4718	113	0
10	11	6	0	0	68	1	0	0	214	1	296	1	1677	1	2266	10	0
11	5	1	25	1	0	0	0	0	0	0	0	0	0	0	30	2	0
12	26	2	0	0	155	2	0	0	189	1	935	1	1446	1	2751	7	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Central Region	1505	253	1629	44	2926	33	2054	14	2733	13	11103	23	11630	7	33581	387	15
14	669	106	1081	25	727	9	0	0	0	0	1967	3	0	0	4443	143	0
15	668	79	645	15	-705	8	712	5	369	2	1832	5	0	0	4952	114	0
16	183	20	304	8	578	6	309	2	850	4	2393	5	0	0	4717	45	6
17	570	67	228	6	287	4	135	1	0	0	618	1	0	0	1839	79	2
18	519	87	363	9	302	4	274	2	236	1	1296	2	1232	1	4222	106	1
Sub-Total Western Region	2629	359	2622	63	2599	31	1430	10	1456	7	8106	16	1232	1	20073	487	9
19	343	58	290	7	400	5	121	1	437	2	425	1	0	1	20171	74	0
Grand Total	8174	1229	7425	192	9707	110	5795	40	9108	45	25772	55	12862	8	78843	1679	62

Source: Forest Products Development Division - Department of Forest Resources and Lands.

Note: The metric values used are calculated from F.B.M. by the converstion factor .0023619315. This may cause some discrepencies in the totals due to rounding.

APPENDIX D

CALCULATION OF VALUE ADDED

These calculations refer to value added for milling and planing only. Costs for wood input include logging costs (in addition to fuel, materials and supplies, maintenance and repair), plus purchased wood costs.

	Gross sales revenue	$8,808,723
Less:	Hired transportation costs	224,938
		$8,583,785
Net sales revenue less the following costs:	Fuel & electricity	$ 999,648
	materials & supplies	145,893
	maintenance & repair	565,967
	cost of wood input	3,354,444
	= Value added by milling & planing	$3,517,833

APPENDIX E

SURVEY RATIOS

Ratios are estimated for 1981/82 and are based on survey results. To use the ratios, simply multiply by total industry production. For ratios which are dollar values, adjust to the year you are using by applying an appropriate index number.

Value per Unit Production	Per FBM	Per m^3
a) Number full-time employees (excluding owners)	0.000012	0.004921
b) Number of part-time employees	0.000011	0.004457
c) Employee payroll ($)	0.075125	31.806752
d) Owner income ($)	0.047246	20.003168
e) Value of mill ($)	0.348929	147.730212
f) Value of logging equipment ($)	0.645918	273.470246
g) Capital expenditures ($)	0.032029	13.560440
h) Operational expenditures ($)		
1) fuel & lubricants	0.015864	6.716688
2) electricity	0.007019	3.352596
3) materials & supplies	0.003471	1.469554
4) hired transportation	0.005352	2.265761
5) insurance	0.002488	1.053198
6) equipment rental	0.001788	0.756861
7) interest on loans	0.008784	3.719013
8) maintanance & repair	0.013465	5.700898
9) other expenses	0.010430	4.416068
10) Total Operational Expenses ($)	0.069596	29.450637

Additional Data

	Indicator	Value
a)	Number of days per year mills operate (days)	171.5
b)	Length of shift (hours)	8.5
c)	Percent of capital expenditure within 50 km of mill (%)	37
d)	Percent of operational expenditure within 50 km of mill (%)	
	1) fuel & lubricants	92
	2) electricity	0
	3) materials & supply	50
	4) hired transportation	70
	5) insurance	69
	6) equipment rental	100
	7) interest on loans	76
	8) maintenance & repair	66
	9) other expenses	70
	10) Overall	67

APPENDIX F

List of Conversion Factors

1 mile	=	1.609 kilometres (km)
1 cord (85 cubic feet solid wood)	=	2.407 cubic metres (m^3)
1000 board feet (fbm) lumber	=	2.362 m^3 lumber
1 sheet 4' x 8' panel (3/8" basis)	=	0.288 m^3
1 sheet 4' x 8' panel (3/8" basis)	=	12.0 fbm
1 cord (85 cubic feet solid wood)	=	500 fbm sawn lumber

Source: Metric Handbook for Canadian Softwood Lumber, 1977.

APPENDIX G

OPERATING EXPENDITURES PER MILL (SELECTED CLASSES)

Operating Expense/Mill ($)	Mill Class			
	1	3	5	7
Fuel & Lubricants	77	788	1,338	19,226
Electricity	nil	196	809	6,091
Materials & Supplies	9	179	311	4,343
Hired Transportation	1	82	351	9,609
Insurance	1	151	196	4,253
Equipment Rental	nil	nil	110	4,943
Interest	5	331	481	12,355
Maintenance & Repair	48	552	1,283	13,817
Other	14	65	2,159	10,052
TOTAL	155	2,344	7,038	84,689